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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,396	09/18/2003	Michael Bailey	EWCCON 3.0-002	4438
530	7590	09/26/2005	EXAMINER	
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			WEST, JEFFREY R	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,396

Applicant(s)

BAILEY ET AL.

Examiner

Jeffrey R. West

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/29/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "330" (Figure 3B) and "400" (Figure 4C).
2. The drawings in Figures 2A and 2B are objected to because they do not contain sufficient titles to indicate to one having ordinary skill in the art what is being displayed.
3. Figures 2A and 2B should be designated by a legend such as --Prior Art— because only that which is old is illustrated. See MPEP § 608.02(g).
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective

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action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 4 and 16 are objected to because of the following informalities:

In claim 4, lines 1-2, to avoid problems of antecedent basis, "the falling edge" should be ---a falling edge---.

In claim 16, line 16, to avoid problems of antecedent basis, "the output" should be ---an output---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 13 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 13 is rejected as failing to comply with the enablement requirement because it recites, "wherein the output signal of said at least one RS232 receiver is coupled to at least one external controller" (page 9, paragraph 0031). The specification, however, specifically states that "the input signal of the at least one RS232 receiver is coupled to an external controller" and does not support coupling the output of at least one RS232 receiver to at least one external controller.

Claim 14 is rejected under 35 U.S.C. 112, first paragraph, because it incorporates the lack of enablement of parent claim 13.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2, 3, 5-12, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is considered to be vague and indefinite because it makes reference to "the incoming operational voltage" while there is no previous mention of any "incoming operational voltage". Therefore, it is unclear to one having ordinary skill in the art as to what voltage "the incoming operational voltage" refers.

Claim 3 is considered to be vague and indefinite because it makes reference to "the incoming operational voltage" while there is no previous mention of any "incoming operational voltage". Therefore, it is unclear to one having ordinary skill in the art as to what voltage "the incoming operational voltage" refers.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, because it further limits claim 4 to specify that "wherein during interruption of said at least one microprocessor, a reading is taken at the input...". Claim 4, however, does not provide any active step of interrupting, but instead only indicates that "the time reference signal is capable of interrupting said at least one microprocessor." Since a limitation being "capable of" does not perform any action, but only requires the ability to perform, further limiting this capability to specify a condition based on an action is unclear.

Claim 9 is considered to be vague and indefinite because recites "wherein said resistor values are set such that said incoming operational input logic high threshold voltage is..." while there is no previous mention of any "resistor values" or "incoming operational input logic high threshold voltage". Therefore, it is unclear to one having ordinary skill in the art as to what "said resistor values" and "said incoming operational input logic high threshold" refer.

Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, because they include limitations similar to that of claim 9.

Claim 12 is considered to be vague and indefinite because it attempts to further limit parent claim 1 to "further comprise[ing] at least twelve RS232 receivers". Claimed in this manner, claim 12 is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections since there is no functional and/or structural

relationship between the components of claim 1 and the "twelve RS232 receivers" of claim 12. See MPEP § 2172.01.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being unclear as well as incomplete for omitting essential steps, such omission amounting to a gap between the steps because it attempts to further limit the method of claim 16 with "further comprising a plurality of external controller circuits". This limitation is unclear because it attempts to further limit a method by specifying "a plurality of external controller circuits" with no associated method. This limitation is incomplete because there is no apparent relationship between the method steps in claim 16 and the limitation of claim 17. See MPEP § 2172.01.

Claims 6-8 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the lack of clarity in their respective parent claims.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-5, 12-14, and 16-20, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,272,427 to Nold et al. in view of U.S. Patent No. 5,841,992 to Martin.

Nold discloses an interface circuit comprising at least one microprocessor operable to perform one or more functions (column 4, lines 55-58), said microprocessor including at least a time input terminal for receiving a time reference signal (column 4, lines 50-54) and a signal input terminal for receiving an input signal within a detectable microprocessor logic operating level (column 4, lines 17-27), a voltage divider coupled to said time input terminal to reduce the incoming operational voltage to within a detectable range (column 4, lines 50-54) and a voltage divider coupled to said signal input terminal to reduce the incoming operational voltage to within a detectable range (column 4, lines 18-27). Nold further discloses that the falling edge of the time reference signal is capable of interrupting said at least one microprocessor (column 6, lines 6-11) wherein during interruption of said at least one microprocessor, a reading is taken at the input of at least one input terminal to determine if an external controller, coupled to said input, has been activated (column 5, lines 56-61 and column 6, lines 11-22), wherein said at least one external controller is selected from a group comprising a thermostat, a switch, a relay contact, and a humidity controller (column 5, lines 56-61).

Nold also discloses a method for detecting an AC voltage input signal comprising providing an interface circuit including a microprocessor (column 4, lines 55-58) splitting a received input signal into a first and second signal (column 4, lines 1-17), the first signal being coupled to a time input of said microprocessor (column 4, lines 17-27), the second signal being coupled to at least one external controller circuit (column 4, lines 17-27), detecting said first signal, interrupting said microprocessor

and sampling (i.e. reading) an output of the at least one external controller circuit after a predetermined delay from interrupting the microprocessor (column 5, lines 56-61 and column 6, lines 6-22).

Nold discloses that if a signal is detected during the sampling step, the method further comprises activating a controller circuit to perform a predetermined function wherein the predetermined function comprises activating a load circuit (column 3, lines 34-41) and the step of activating a controller circuit comprises activation of one or a relay, a switch, or a driver circuit (column 3, lines 5-11).

Nold further discloses the system comprising a plurality of external controller circuits (i.e. thermostat, high limit control, ignition control, and gas valve) (abstract).

As noted above, the invention of Nold teaches many of the features of the claimed invention and while the invention of Nold does teach a microprocessor having a signal input terminal and a time input terminal, wherein the microprocessor is a ULN2003A microprocessor that comprises TTL inputs (see ULN2003A Datasheet), Nold does not specifically include a corresponding means for insuring that the inputs are in TTL format.

Martin teaches a network-to-serial device intelligent converter comprising means for interfacing a network device to any one of several different types of serial devices (column 3, lines 38-40) communicating over a protocol commonly used for HVAC systems (column 1, lines 57-60) including an RS-232 receiver having an input for receiving an input signal and an output for transmitting a microprocessor logic

operating voltage signal, the output of the RS-232 receiver being coupled to a signal input terminal of a microprocessor (column 6, lines 30-41)

It would have been obvious to one having ordinary skill in the art to modify the invention of Nold to specifically include RS-232 receivers on the input lines to the microprocessor, as taught by Martin, because, as suggested by Martin, the combination would have provided a corresponding means for insuring that the inputs to the microprocessor of Nold, receives inputs in the required format (column 6, lines 30-41).

Although the combination of Nold and Martin does not specifically disclose the use of twelve RS232 receivers, the invention of Nold and Martin does teach a plurality of external controllers each providing inputs to a microprocessor with an associated RS232 for each input to convert the data to a proper microprocessor format. It would have been an obvious modification to one having ordinary skill in the art to provide as many inputs as needed, such as twelve, in order to provide sufficient monitoring of all of the desired external controllers. Such a modification would also provide twelve corresponding RS232 receivers to provide the necessary conversion for the twelve inputs, as taught by the combination of Nold and Martin.

12. Claims 6-11, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nold et al. in view of Martin and further in view of U.S. Patent No. 5,321,323 to Lehmann.

As noted above, the invention of Nold and Martin teaches many of the features of the claimed invention including voltage dividers to step down the inputs to the microprocessor as well as converting the input to the microprocessors into a corresponding TTL voltage. The combination, however, does not specifically indicate the corresponding range of values required to conform to the TTL format.

Lehmann teaches a surge limited low-power transceiver circuit including RS-232 and TTL interfaces (column 2, lines 3-6) wherein the corresponding input range of the TTL system requires that the incoming operational voltage is between about .5 to 2.7 volts with an input logic high threshold voltage at about 2.1 volts (i.e. 2.0 volts) and an input logic low threshold voltage at about 1.1 volts (i.e. .8 volts) (column 3, lines 37-42).

It would have been obvious to one having ordinary skill in the art to modify the invention of Nold and Martin to specify that the incoming operational voltage be between about .5 to 2.7 volts with an input logic high threshold voltage at about 2.1 volts and an input logic low threshold voltage at about 1.1 volts, as taught by Lehmann, because the combination of Nold and Martin does teach transforming the input to the microprocessor to a TTL format and Lehmann suggests that a TTL format requires the incoming operational voltage be between about .5 to 2.7 volts with an input logic high threshold voltage at about 2.1 volts and an input logic low threshold voltage at about 1.1 volts (column 3, lines 37-42) and therefore the modification would have conformed to the requirements of the TTL format to insure accurate data detection by the microprocessor.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nold et al. in view of Martin and further in view of U.S. Patent No. 4,283,007 to Bramow et al.

As noted above the invention of Nold and Martin teaches many of the features of the claimed invention and while the invention of Nold and Martin does teach including several safety features, the combination does not specifically include a failsafe interface control circuit coupled between an output terminal of an external controller and said input of said at least one RS232 receiver, whereby said failsafe interface control circuit is capable of minimizing microprocessor malfunctioning.

Bramow teaches multiple load integrated fluid control units in a VAC system (column 1, lines 9-13) including a controller for receiving inputs from a plurality of external controllers (column 2, lines 1-5) a failsafe interface control circuit (i.e. interlock circuit) coupled between an output terminal of an external controller and said input of the controller (column 2, lines 10-14 and column 11, lines 1-7), whereby said failsafe interface control circuit is capable of minimizing microprocessor malfunctioning (column 10, lines 13-29).

It would have been obvious to one having ordinary skill in the art to modify the invention of Nold and Martin to specifically include a failsafe interface control circuit, as taught by Bramow, because, as suggested by Bramow the combination would have improved the HVAC system operation of Nold and Martin by insuring that the microprocessor provided proper control during all conditions (column 12, lines 33-

45) through proper temperature compensation as well as provide safety interlocking (column 10, lines 13-29).

Further, since the invention of Bramow teaches a failsafe interface control circuit coupled between an output terminal of an external controller and an input to a microprocessor and the invention of Nold and Martin teaches including an RS232 receiver between the external controller and microprocessor, the combination would have provided the failsafe interface control circuit coupled between an output terminal of an external controller and said input of said at least one RS232 receiver.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent No. 5,640,153 to Hildebrand et al. teaches an energy utilization controller and control system and method for use in a HVAC system comprising RS-232 to TTL conversion.

U.S. Patent No. 6,266,001 to Fang et al. teaches a method and apparatus for switching low voltage CMOS switches in high voltage digital to analog converters wherein the input range for TTL logic is between .8 to 2.0 volts.

U.S. Patent No. 6,089,310 to Toth et al. teaches a thermostat with load activation detection failure.

U.S. Patent No. 6,450,409 to Rowlette et al. teaches a method and apparatus for a wiring room thermostat to two-stage HVAC system.

U.S. Patent No. 6,307,464 to Miller et al. teaches a method and apparatus using phases for communication in a thermostat circuit.

"ULN2003A" Datasheet teaches the use of TTL compatible inputs for the ULN2003A microprocessor.

Lux, "Voltage Dividers" teaches various forms of voltage dividers.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrw

September 21, 2005



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